

## **Syntactically-Governed Accentuation in Balinese\***

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**Abstract:** In Balinese there is a consistency of alignment between F0 peaks and particular syntactic positions such as "final syllable of the head of the phrase" or "final syllable of the phrase." This becomes apparent from F0 measurements taken from sentences recorded from a Balinese speaker which include measurements from sentences with different syntactic constructions and different length words in each syntactic position. Thus, the placement of F0 peaks in Balinese is not distinctive and in fact, there is no word-level accentuation in Balinese. Rather, placement of F0 peaks occurs at the phrasal level and hence serves a delimitative function.

## **INTRODUCTION**

Field-work on Balinese suggests that there is no word-level stress or accentuation in this language at all, but that accentuation does exist at the phrasal level and is governed by syntactic principles. Thus, Balinese differs from tone-languages such as Cantonese (with lexically contrastive use of fundamental frequency (F0)), from classic pitch-accent languages such as Serbo-Croatian and Japanese (with lexically determined placement of accent), and from classic stress-accent languages such as English and Italian (with pitch accents chosen from an inventory of intonational morphemes and associated to lexically contrastive locations in words). Instead, the accentuation in Balinese resembles languages like Korean (as described by Jun, 1993) and French (as described by Jun and Fougeron, 1995), in which the "pitch-accent," or localized F0 excursion, serves a delimitative purpose.

This paper describes the evidence for such a characterization of accentuation in Balinese. The argumentation is as follows. First, it will be argued that there is no word-level stress or accentuation in Balinese. Then, the syntactic principles governing accentuation will be illustrated by showing a consistency of alignment of F0 peaks with syllables in particular syntactic positions. The discussion of these syntactic principles will be divided into discussion of accentuation in single-word subjects, in more complex subjects, in predicates, and in clauses. This will be followed by a discussion of sentence-level accentuation, including the use of F0 in question-formation and in focus.

## **METHODS**

The corpus of data examined here was elicited and recorded during field-work with a Balinese speaker. The sentences were recorded in a quiet room in the speaker's home using a Sony "professional" portable tape recorder and digitized using Waves™. When F0 measurements are reported, they are measured at the highest point in the vowel for syllables with a clearly visible F0 peak and at the center of the vowel for vowels without a clearly visible F0 peak, as shown in figure 1. The only acoustic correlate studied here was F0 variation, since there were clear F0 events in the recorded speech. This is not to imply that

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other potential correlates, such as duration or intensity patterns, are not important components of accentuation in Balinese. Rather, the corpus does not include materials appropriate to examine these phonetic cues in production. Perception tests manipulating these factors would be needed to determine the perceptual importance of each factor, but for now, in this production study, the factor under investigation is F0.

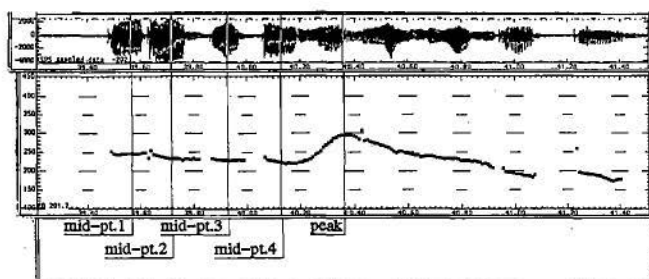


Figure 1. A sample F0 trace and speech waveform, indicating where F0 was measured for the sentence [pirabotane luwun luwun gati] 'his furniture is very nice.' The vertical lines marked "mid-pt. 1," "mid-pt.2," "mid-pt.3," and "mid-pt.4" are at the mid-points of the vowels in the syllables [pi], [ra], [bo], and [ta] respectively, and the vertical line marked "peak" is marking the highest point in the F0 peak on the syllable [ne].

The speaker is a 27 year old woman from Tabanan, in Southern Bali. Balinese is her primary language, learned at home. Indonesian was her language of education, and she also speaks Javanese and English. In several of the Indonesian languages, including Balinese, there are ways of expressing relative social status between speakers (as determined by caste, skills, age, and wealth) through the use of language (Stevens, 1965; Barber, 1977; Ward, 1973; and Geertz, 1972). Respect for the addressee is shown by the speaker by the use of High language and lack of respect for the addressee is shown by the speaker by the use of Low language. The levels of language are expressed mainly by the choice of lexical items and not by phonology, morphology, or syntax. Although most of the vocabulary is neutral, it has been estimated that several hundred words, including many of the most commonly used words, have forms in more than one status set (Ward, 1973; Barber, 1977). Changes in modern Balinese society, including a breakdown of the traditional caste system, have raised problems for the use of levels of politeness in language. It has been observed that the traditional norms of language usage with respect to levels of politeness are on the decline (Shadeg, 1977), and this observation is confirmed by the impressions of the speaker in this study. The speaker used in this study controls both the High variety and the Low variety of Balinese. For consistency's sake, and since the situation in field-work is an unnatural discourse situation in that the addressee is the field-worker (and not a speaker of Balinese), for this study the speaker was asked to speak as she would to friends. This request resulted in a blend of High and Low vocabulary, or a type of "Mid" speech.

Segmental effects were not controlled for, but on the whole did not affect the outcome of the F0 measurements, as can be seen by the tight clustering of F0 values in the graphs throughout the paper, regardless of segmental content. For reference, the vowel inventory of Balinese consists (phonemically) of /u i o e a i/. The high tense vowels /i u/ have lax counterparts [ɪ ʊ] which occur in word-final closed syllables, which is shown both by distribution and by alternations. The mid tense vowels /e o/ have the lax counterparts [ɛ ɔ] which occur in word-final closed syllables and also preceding word-final closed syllables with [ɛ] and [ɔ], again shown by both distribution and alternations. The vowels

are transcribed phonetically in this paper, not phonemically. There are also restrictions on which vowels may co-occur within morphemes. The high vowels may co-occur with each other in a morpheme (both tense and lax counterparts) and the mid vowels may co-occur with each other in a morpheme (both tense and lax counterparts), but the high vowels may not occur in the same morpheme with the mid vowels. On the other hand, /a/ and /ɪ/ may co-occur in a morpheme with either high vowels, mid vowels, or themselves. Syllables in Balinese are of the form V, CV, or CVC. The consonant inventory of Balinese is shown in figure 2 for reference.

	labial	coronal	dorsal	glottal
stop	p b	t d	k g	ʔ
fricative		s		h
affricate		tʃ dʒ		
nasal	m	n	ŋ	
approximant	w	y r l		

Figure 2. The Consonant Inventory of Balinese

## THE LACK OF WORD-LEVEL ACCENTUATION

It is theoretically impossible to prove that some entity does not exist. Therefore, it is impossible to prove that word-level accentuation does not exist in Balinese. However, if word-level accentuation in some form did exist, one might expect to find certain indications of it. First of all, there might be minimal pairs of words in the language which contrasted only in accentuation pattern. There are no such minimal pairs in Balinese.

Furthermore, the native speaker of the language would be expected to have some intuitions about the prominence of particular syllables relative to the other syllables in a lexical item. Thus, anecdotal evidence suggests that native speakers of English, even as school-children, can tap out stress patterns of English words, indicating with stronger taps which syllable is stressed. Anecdotal evidence suggests that this is an impossible task in Balinese. The speaker was asked to clap out words with her hands, giving a stronger clap for more prominent syllables (with a demonstration from English). However, this attempt at uncovering word-level stress or prominence in Balinese was unsuccessful, because not only did the speaker not clap her hands more strongly on any particular syllable, but also she could not quite see the point of the exercise.

If a language had word-level accentuation, it might also be expected that words in isolation would display an accentuation pattern, and would show analogous accentuation to that which is present in sentences. Thus, further evidence against word-level accentuation in Balinese comes from a comparison of recordings of words in isolation with recordings of words in sentences. In words said in sentences, there are clear F0 peaks aligned with certain syllables (the principles of which will be discussed below). In words in isolation, on the other hand, it is possible to have a word with a completely flat F0 pattern (allowing for micro-segmental perturbations), although it is actually difficult to record a word in isolation without eliciting what appears to be a list intonation, with a sharp rise in F0 on the final syllable of each word (except the last). Even attempts to record single words in isolation often show this sharp rise on the last syllable, which seems to be analogous to what is known as "continuation rise" in other languages, as the speaker seems to be indicating that she is willing to continue to the next word, or that further material follows. Some examples of "accent-less" words recorded in isolation are given in figure 3, although such words are atypical examples of utterances and most of the words recorded during the same session do show a continuation rise. Some examples comparing words said in isolation to the same word said in a phrasal context are given in figure 4, although again the accent-less words would be the atypical case.

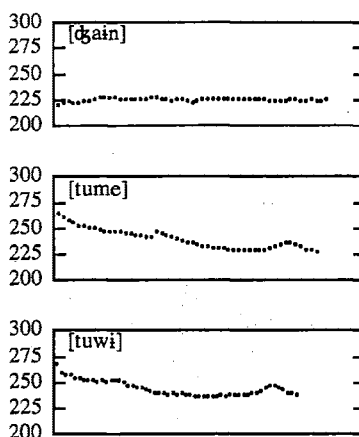


Figure 3. F0 traces of words in isolation, showing no F0 accent (which is atypical and difficult to elicit).

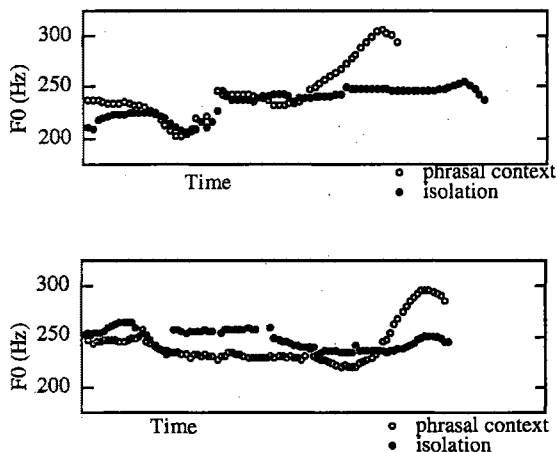


figure 4. F0 traces of the same word recorded in isolation overlaid on F0 traces of words extracted from a phrasal context. The top graph is the word [baɔ̌gune] "the clothes" and the bottom graph is the word [pirabotane] "the furniture."

Furthermore, the brief descriptions of word-level accentuation or stress in reference grammars may be taken as supporting evidence. The problem with authors' descriptive accounts of stress or accent is the interference from the author's native language and the consequent reluctance of speakers of stress-accent languages to posit a stress-less lexical system. For example, Barber (1977, p.15) does say that "There is no strong word-stress in Balinese in ordinary speech, there is only a slight variation in loudness and energy between the syllables of a sentence." This will be taken as supporting evidence for the hypothesis that there is no word-level accentuation in Balinese, despite the fact that, as a speaker of a

stress-accent language, presumably there is some reluctance on Barber's part to maintain the assertion completely, since he goes on to describe word-stress as "In words of more than two syllables (not counting suffixes), the penultimate syllable is stressed unless the vowel is e." [which is transcribed as [i] here] (Barber, 1977, p. 15)

Further supporting evidence comes from Indonesian and Javanese, languages which are closely related to Balinese. There have been several conflicting accounts of word-stress in Indonesian, leading Odé (1994) to rethink the notion "word-stress" in Indonesian. She provides a summary of the literature on Indonesian word-stress, in which she says that while previous authors all agree that word stress is not distinctive, they disagree on whether word-stress is fixed on the penultimate syllable, on whether word stress is fixed on the final syllable, on whether a schwa is stressable, and on whether pitch is a cue for word-stress. She shows that the literature on word stress in Indonesian is not based on perceptual evidence, and that according to her study,

...prominence in Indonesian cannot be described in terms of stressed or accented syllables as described in the literature. Therefore, the syllable does not seem to be the level on which prominence must be studied. (Odé, 1994, p. 63)

Her study focusses instead on prominence on the prosodic phrase level. Odé's study will be taken as supporting evidence for the claim that there is no word-level stress in Balinese, and that accentuation in Balinese must be studied at the phrasal level. Similarly, there is supporting evidence from Javanese, which is also related to Balinese. Horne (1961), in a textbook on Javanese, gives a description of its accentuation patterns which makes it clear that there is no word-level accentuation, although there are phrase- or sentence-level patterns of accentuation. She writes,

Javanese, unlike English, lacks word accent. It makes no difference which syllable of a Javanese word gets the loudest stress. Sentences in Javanese, on the other hand, have certain characteristic accent patterns. (Horne, 1961, p. xxvi)

Although of course speculation about the lack of word-level stress in related languages is not proof that there is no word-level stress in the language in question, it will nonetheless be used as another piece of supporting evidence, even though it would make a weak argument on its own.

Thus, although it is in fact impossible to prove the non-existence of some entity, the pieces of evidence described above—lack of minimal pairs, lack of speaker intuitions, flat F0 patterns on words in isolation, previous accounts of stress (or lack thereof), and studies of stress in very closely related languages—are all suggestive of a lack of word-level prominence in Balinese.

## ELICITATION APPROACH

Odé (1994, p. 63) concludes on the basis of perception experiments that "prominence in Indonesian cannot be investigated in the way we are accustomed to in intensively investigated languages with word stress such as, for instance, English..." This is the attitude that will be adopted here. Thus, instead of comparing lexical items to each other in order to determine the relative prominence of various syllables with respect to each other, as might be useful in a stress-accent language, the items under comparison in this study will be sentences with various syntactic structures and sentences containing varying numbers of syllables in each syntactic position. For example, sentences with one-word nominal subjects can be compared to sentences with more complex nominal subjects to see if there is an F0 peak on the same syllable in the head noun regardless of the complexity of the phrase. Or, sentences with monosyllabic nominal subjects can be compared to sentences with di- or tri-syllabic nominal subjects to see if the F0 peak aligns with a particular syllable in the subject, and how that syllable is determined. These types of comparisons in the present corpus show that there is an F0 rise on the "same" syllable in

the sentence, syntactically speaking, regardless of other factors such as the length of individual words or the syntactic category of individual words. This consistency of alignment of F0 peaks with particular syntactic positions is shown by taking the mean F0 values from a particular syllable (such as, say, the final syllable of the head of a phrase) and comparing that mean to the mean F0 values from other syllables (such as, say, all pre-final syllables of the head of a phrase). If the means are significantly different from each other, then it will be argued that there is an F0 peak aligned with a particular position in the sentence. It will be shown that the relevant positions or categories to which F0 peaks align are not things like "noun" or "verb" but rather things like "head of the phrase" or "final syllable in the phrase." Hence, the claim can be made that accentuation in Balinese is syntactically governed.

## ACCENTUATION ON SINGLE-WORD SUBJECTS

To begin, sentences with single-word nominal subjects can be elicited. The subject nouns can contain any number of syllables, from two up to about six. Examples include the two-syllable word [yehe] "the water," the three-syllable word [paɟiŋe] "the umbrella," the four-syllable word [sipedane] "the bicycle," the five-syllable word [pirabotane] "his furniture," and the six-syllable word [matematikane] "the math." No matter how many syllables the word contains, though, there is always an F0 rise on its final syllable. One such token is shown in figure 5. The peak is on the third syllable of the subject noun. (The rise on the last syllable of the sentence seems to be the continuation rise discussed above.)

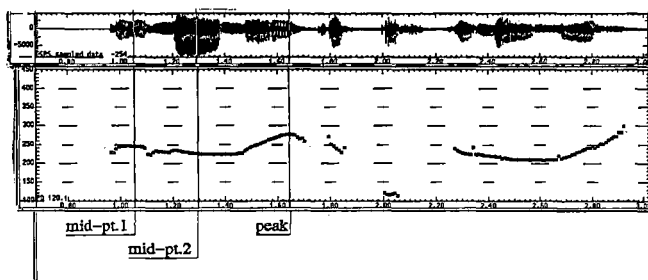


Figure 5. A sample F0 trace and waveform of a one-word nominal subject with a peak on the final syllable of the noun. The sentence shown here is [limane ɕipis ɕilanan] "his hand was caught in the door." The vertical lines marked "mid-pt. 1" and "mid-pt. 2" are marking the mid-points of the vowels in the syllables [li] and [ma] respectively, and "peak" is marking the highest point of the peak in the third syllable [ne].

Figure 6 shows the means (with standard error bars) of all of the pre-final syllables for all of the tokens (measured at the center of the vowel) compared to the mean of all of the final syllables (measured at the highest point of the peak). An unpaired t-test shows that the F0 values of pre-final and final syllables are statistically different at the .05 level. The point on this graph averages over 4 examples with 2-syllable subjects, 3 examples with 3-syllable subjects, 3 examples with 4-syllable subjects, 2 examples with 5-syllable subjects, and 1 example with a 6-syllable subject. Thus, since the means of pre-final syllables are well-separated from the means of final syllables and are in fact statistically different, and since there is a tightly compacted, non-overlapping error, it can be seen that there is an F0 peak aligned with the last syllable of nominal subjects, no matter how many syllables those nouns contain.

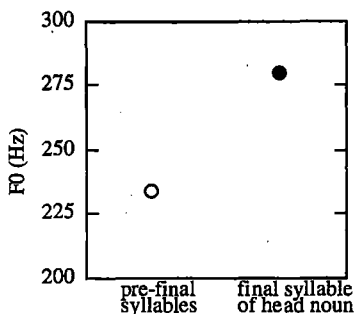


Figure 6. Pre-final vs. final syllables in 1-word nominal subjects. The sentences used are listed in Appendix 1a.

The same phenomenon is observed in each conjunct of conjoined noun phrases. For example, two phrases can be conjoined with [aɖaʔ] “and” or with [napi] “or.” In these cases, there is an F0 peak aligned with the last syllable of the nominal subject in each conjoined phrase.

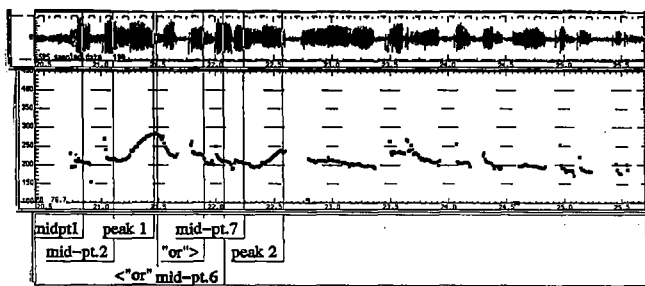


Figure 7. A sample F0 trace and waveform of a sentence with conjoined nominal subjects. The sentence shown here is [bapane napi biline ane lakar natihun iyi ki doktir] “It is his father or his brother that will drop him off to the doctor.” “mid-pt. 1” is for [ba], “mid-pt. 2” for [pa], “mid-pt. 6” for [bi] and “mid-pt. 7” for [li] while “peak 1” and “peak 2” mark the highest points in the peaks on the last syllables [ne] of each conjunct. The angled brackets marked “or” show the edges of the word [napi] meaning “or.”

The F0 peak on the final syllable of each conjunct is higher than the F0 values of all of the pre-final syllables in that conjunct, although the F0 peak on the final syllable of the second conjunct is lower than the F0 peak on the final syllable of the first conjunct. The fact that the second peak is lower than the first may be indicative of sentence-level declination. The points in figure 8 average over two examples with a 3-syllable first conjunct and a 3-syllable second conjunct and one example with a 2-syllable first conjunct and a 3-syllable second conjunct. Unpaired t-tests show that the last syllable is statistically different than the pre-final syllables at the .05 level for the first conjunct and for the second conjunct as well. Thus, there is a consistency of alignment between the F0 peak and the final syllable of the subject noun, as shown by the well-separated means of pre-final and final syllables of each conjunct, regardless of the length of the subject noun in each conjunct.

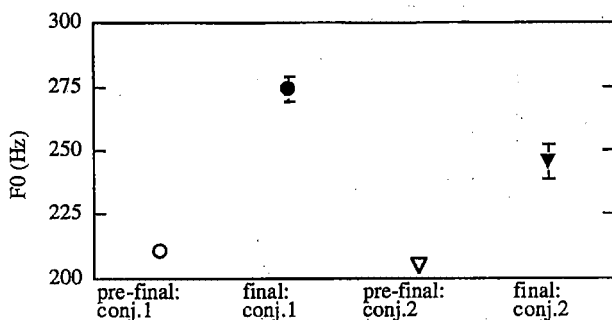


Figure 8. Pre-final vs. final syllables in conjoined single-word nominal subjects. The sentences used here are shown in Appendix 1b.

### ACCENTUATION IN MORE COMPLEX SUBJECTS

In more complex subject phrases longer than one word, the same pattern is observed in the head of the phrase, but there is an additional F0 peak later in the phrase. In these cases, then, not only is there an F0 peak on the last syllable of the head of the phrase (as described above for one-word subjects) but there is also an F0 peak on the last syllable of the phrase itself—again, regardless of the number of syllables involved. Thus, there may be any number of syllables in the head of the phrase, but the first F0 peak in the subject will always be on the last syllable of the head. Similarly, there may be any number of intervening syllables between the head of the phrase and the end of the phrase, but the next F0 peak in the subject phrase will occur on the last syllable of the phrase itself. Figure 9 shows a token with a noun phrase (NP) containing 2 adjectives. The first F0 peak is on the third syllable, which is the final syllable of the head noun. The next F0 peak is on the seventh syllable, which is the final syllable of the NP (that is, the final syllable of the second adjective).

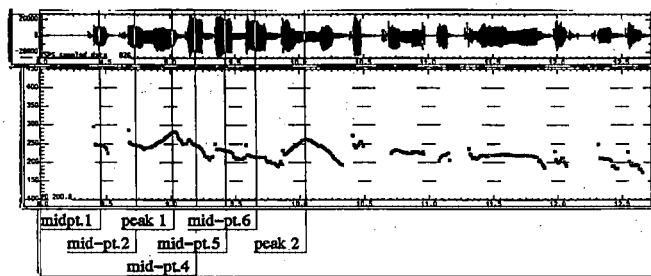


figure 9. A sample F0 trace and waveform of a more complex NP. This is a sentence with two adjectives following the head noun in the subject. The sentence shown here is [ʃiʃiŋi gide badiŋ nyigut anaʔe tuwi ɲidiŋ idiŋ] "the big black dog bit the old beggar person." The lines marked "peak 1" and "peak 2" mark the highest points of the peaks on the syllables [ŋi] and [diŋ], which are the final syllables of the noun [ʃiʃiŋi] and the adjective [badiŋ].



Examples of constructions examined include genitive constructions, adjective phrases, and pre-posed stative verbs. Genitives are formed with the suffix [-n]. Such sentences are of the form [[noun-of] mine] or [noun-of [[noun-of] mine/his]]]. For example, the phrase [bapan timpal tiyane] means "the father of the friend of mine." This example would have the two-syllable head noun [bapan] "the father of" and four syllables (namely, [tim.pal. ti.ya.]) intervening between the final syllable of the head noun and the final syllable of the phrase (which would be the [ne] of [tiyane] in this case). The points in figure 10 average over 10 examples of the form [[noun-of] mine], seven of which had 2-syllable nouns, two of which had 3-syllable nouns, and one of which had a 4-syllable noun. The points in figure 10 average over four examples of the form [noun-of [noun-of mine/his]], all of which had 2-syllable head nouns. There was a peak on the final syllable of the head noun and on the final syllable of the NP itself in each case.

Adjective phrases involve the head noun of the phrase followed by any number of adjectives. For example, the phrase [baɕune tips baraʔ] means "the long red skirt." This example would have a three syllable head noun [baɕune] and there would be three syllables (namely, [ti.pis. ba.]) intervening between the final syllable of the noun and the final syllable of the phrase (which would be the syllable [raʔ] of [baraʔ] in this case). The points in figure 10 average over 9 such sentences, each of which had a three-syllable head noun. Of these, one had 10 syllables intervening between the final syllable of the head noun and the final syllable of the phrase, two had 5 syllables intervening, two had 3 syllables intervening, two had 1 syllable intervening, and two had the noun unmodified by an adjective. In each case, there was an F0 peak on the final syllable of the head noun and another peak on the final syllable of the phrase (which would be the last adjective in the phrase).

Stative verbs in Balinese are formed with the prefix [mi-]. Such verbs may be "pre-posed" out of the canonical SVO word order and appear at the beginning of the sentence. In such cases, the head of the phrase is the verb and the intervening syllables include any material in the subject noun. All of the sentences here included further material following the subject noun, such as a prepositional phrase or an adverb. For example, [mitakon iyi aɕaʔ gurune] means "he's asking the teacher." This example would have a three syllable stative verb [mitakon] and a two syllable subject noun [iyi]. The points in figure 10 average over 5 such sentences, three with 3-syllable stative verbs and two with 4-syllable stative verbs. Four of the sentences had a 2-syllable subject noun or pronoun and one had a 3-syllable subject noun. There was a peak on the final syllable of the pre-posed stative verb and another peak on the final syllable of the subject in each case.

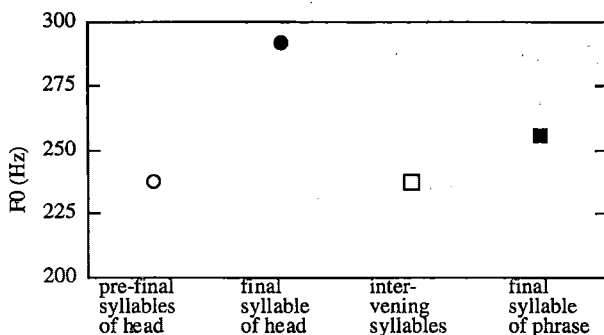


Figure 10. F0 values in more complex NPs. The sentences used here are shown in Appendix 2a, b, and c.

Figure 10 includes all three types of constructions and shows the mean F0 value of the pre-final syllables of the head (measured at the center of each vowel), the mean F0 value of the final syllable of the head (measured at the highest F0 value of the peak), the mean F0 value of all of the syllables intervening between the head and the end of the phrase (measured at the center of each vowel), and the mean F0 value of the final syllable in the subject phrase (measured at the highest F0 value of the peak). Unpaired t-tests show that the F0 values for the pre-final syllables of the head of the phrase are statistically different from the F0 values for the final syllable of the head of the phrase at the .05 level. This means that there is still an F0 peak on the final syllable of the head of the phrase, just as there was in single-word nominal subjects. Unpaired t-tests also show that the values for the syllables intervening between the head and the end of the phrase are statistically different from the values for the final syllable of the phrase at the .05 level. Again, the lower F0-value of the phrase-final peak as compared with the earlier peak may be indicative of utterance-level or phrase-level declination. Because the means for all pre-final syllables are clustered so tightly together, and because the means for all final syllables are clustered so tightly together (such that the standard error bars are not even visible here), and because the means for pre-final syllables are so well-separated from the means for final syllables, there can be said to be a consistency of alignment between the F0 peaks and syntactic positions. Thus, the accentuation is governed by the syntactic structure, although it is not dependent on syntactic categories such as "adjective" or "possessive" but rather on syntactic functions such as "head of phrase."

Interestingly, these locations match a description of F0 peak placement in Indonesian given by Laksman (1994), who writes that:

In the realization of an NP before the verb, the highest F0 peak appears in the final syllable of the phrase. A secondary peak occurs on the last syllable of the first word. After the first word of the NP the F0 contour is generally falling until the penultimate of the final word. (Laksman, 1994, p. 128)

This seems to imply that F0 peaks in Indonesian are also aligned with the last syllable of the head of the phrase and with the last syllable of the phrase, just as they are in Balinese.

F0 peak placement in Balinese is also interesting in that it supports the cross-categorical claim of Selkirk's (1986) end-based theory of accentuation. That is, Selkirk proposes that:

...the relation between syntactic structure and prosodic structure above the foot and below the intonational phrase is defined in terms of the *ends* of syntactic constituents of designated types. ... The general claim I am making here is that  $\alpha$  [the selected constituent] will be drawn from the set of categories defined in X-bar theory, and that  $\alpha$  indicates only a level (or type) in the X-bar hierarchy, which is to say that the syntax-to-prosody structure mapping is claimed to be cross-categorical in nature. (Selkirk, 1986, p. 385)

This claim of the cross-categoriality of the syntax-to-prosody mapping would seem to be supported by the data in this section, where the F0 peak is aligned with the "same" syllable, namely, the final syllable of the head word, no matter whether it is a head noun in a genitive construction, a head noun in an adjective phrase, or a pre-posed stative verb acting as the head.

## PRINCIPLES OF ACCENTUATION IN PREDICATES

The picture of accentuation in predicates is not so clear. When there is indeed an F0 peak in the predicate, its placement follows the principles outlined above. That is, there will be an F0 peak on the final syllable of the head of the verb phrase and another on the final syllable of the verb phrase itself. However, there often is not an F0 peak in the predicate at all, and the F0 contour seems to just decline steadily with no perturbations (except for segmental ones). Comparison between sentence types can be used to show the difference

between predicates with and without an accent. One reason for (the appearance of) the lack of F0 accent on some predicates may be an extreme compression of the pitch-range in the sentence-final phrase. Thus, for example, passive verbs almost always show an F0 peak on their final syllable, but their agent-phrase (which follows the verb) tends to show an F0 peak only if there is another phrase following it.

Passive verbs are formed using the non-nasalized form of the verb and the valence-increasing suffix [-an]. The initial segment of a verb in Balinese alternates between a nasal and a corresponding non-nasal, indicating active voice (nasal) and passive voice (non-nasal). The correspondences are shown in figure 11. The valence-increasing suffix [-an] marks benefactives and causatives as well as passives— hence it marks a simple increase in the number of arguments. (In general, the resulting derived verb takes 3 arguments, including the subject.) A number of other languages, including Chuckchee and Wolof, have the same range of functions marked by a single affix (Comrie, 1985). Third-person agents are marked on the verb by the additional suffix [-i]. The agent of the verb is preceded by [aɕʒaʔ] (a function word which can also mean “and”).

passive	active
[p b]	[m]
[t d]	[n]
[ʃ ɕ s]	[ny]
[k g V]	[ŋ or ŋ+V]
[l r w m]	[ŋi + verb]

Figure 11. Nasal / non-nasal correspondences

The points in figure 12 average over nine 4-syllable passive verbs and two 5-syllable passive verbs. An unpaired t-test shows that the final syllable is statistically different from the pre-final syllables at the .05 level. Thus, in the predicate as well, it seems that there is an F0 peak on the final syllable of the head of the phrase.

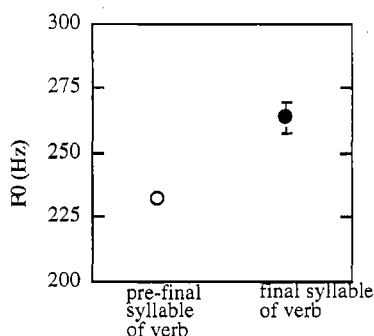


Figure 12. F0 measurements for pre-final vs. final syllables in passive verbs. The sentences used here are shown in Appendix 3a.

Comparisons between sentence-final and non-sentence-final phrases in the predicate can come from comparisons of passives whose agent-phrase occurs utterance-finally with passives whose agent-phrase is followed by other material. The comparison in this case would be between the two agent-phrases themselves— one of which is the final phrase in the sentence and one of which is not the final phrase in the sentence. For example, a prepositional phrase may occur in the middle of the sentence, allowing the agent-phrase to be sentence-final, as in the top example in figure 13. Or, the same prepositional phrase may

occur at the end of the sentence after the agent, making the agent-phrase non-final, as in the lower example given in figure 13.

[lulune garbage-the the garbage	intuŋani was thrown away was thrown away	ki to to the river	ʃilabahe river-the by my aunt	aɕaʔ by by	uwan aunt-of aunt-of	tiyaŋe] mine mine
[lulune garbage-the the garbage	intuŋani was thrown away was thrown away	aɕaʔ by by	uwan aunt-of aunt-of	tiyaŋe mine mine	ki to to the river	ʃilabahe] river-the river-the

Figure 13. Examples of sentences with the agent phrase final in the sentence (top example) vs. non-final in the sentence (lower example). The agent phrase in underlined in each case.

The passive agent has an F0 peak on the last syllable of the phrase if the agent-phrase is non-final in the sentence. If the passive agent is the final phrase in the sentence, then it does not have an F0 peak at all, reflecting the fact that it is the final phrase and hence has a very compressed pitch range. Figure 14 shows a token of a sentence-final agent phrase and a non-final agent phrase. Only the agent phrase is shown here. There is a peak on the final syllable of the non-sentence-final agent phrase, and no peak on the final syllable of the sentence-final agent phrase.

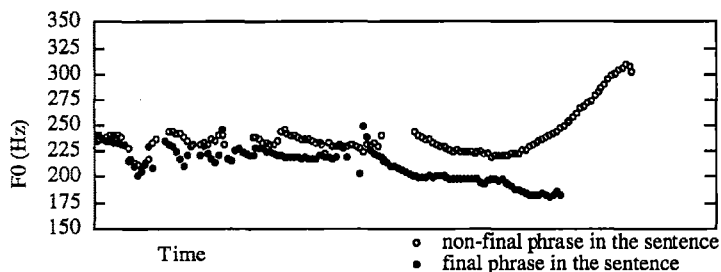


Figure 14. An F0 trace of an agent phrase which is final in the sentence overlaid on an F0 trace of an agent phrase which is non-final in the sentence. This is the agent phrase [aɕaʔ uwan tiyaŋe] "by my aunt" and only the agent phrase itself is shown here.

The points in figure 15 average over two examples with following material after the agent phrase and nine examples without following material after the agent phrase (and hence with agent phrase final in the sentence). The non-sentence-final phrases do show an F0 peak on their final syllable, while the sentence-final phrases actually show a decline in F0 on their final syllable. Unpaired t-tests show that the final syllables of both final phrases and non-final phrases are different than the pre-final syllables at the .05 level, although non-final phrases show an F0 rise while final phrases actually show an F0 fall on the final syllable. The final syllables of non-final phrases show such a large error because there are only two examples. These facts indicate that the principles of accentuation are the same in predicates as they are in subjects. Namely, there is an F0 peak on the final syllable of the head of the phrase and another F0 peak on the final syllable of the phrase itself. This effect is complicated by what appears to be utterance-final compression of F0-range, in which the sentence-final phrase does not display any of the expected F0 peaks.

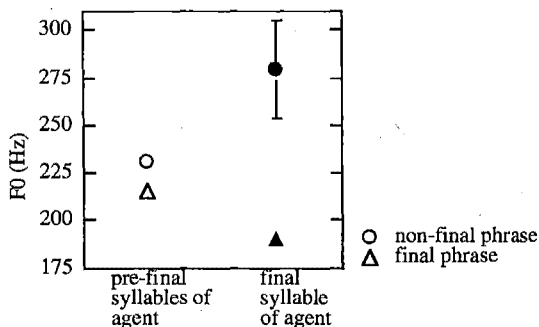


Figure 15. Passive agents that are final in the sentence vs. non-final in the sentence. The sentences used here are shown in Appendix 3a.

A similar comparison to the one just made between sentence-final and non-final agent phrases can be made between ditransitive verbs marked with the valence-increasing suffix [-an] (and hence taking 2 objects) and those without it (which take either 0 or 1 object). For example, a comparison can be made between the sentences in figure 16.

[tiyan <u>mili</u>	sipatu baru]	
<i>I bought</i>	<i>shoes new</i>	
I bought new shoes		
[tiyan <u>milian</u>	adın	tiyane sipatu baru]
<i>I bought-for</i>	<i>brother-of</i>	<i>mine shoes new</i>
I bought new shoes for my brother.		

Figure 16. Example sentences with a simple verb vs. with a valence-increasing verb.

In these cases, since the unsuffixed verbs are part of the sentence-final phrase, they show no F0 peak. The suffixed verbs, on the other hand, can have a benefactive interpretation with two objects, so the verb is not part of the sentence-final phrase and hence can have an F0 peak on it. The effect shown here is slightly confounded by the immediately preceding peak in the final syllable of the subject phrase. The presence of that peak means that the first syllable of the verb is higher than might be expected, since it is in the decline from the previous peak. The points in figure 17 average over 10 examples of simple verbs and 28 examples of suffixed, valence-increasing verbs. The unsuffixed forms examined here are all disyllabic and the suffixed forms are all trisyllabic. Unpaired t-tests show that although the prefinal syllables of suffixed forms are different from the final syllables of suffixed forms at the .05 level (because there is a peak present), the prefinal syllables of the unsuffixed forms were not statistically different from the final syllables of the unsuffixed forms at the .05 level (because the final syllable is part of a gradual decline towards the end of the sentence).

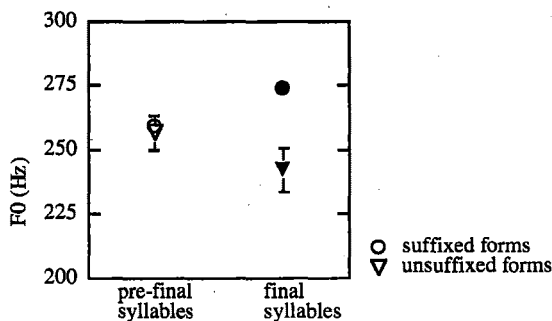


Figure 17. Pre-final vs. final syllables of simple verbs vs. valence-increasing verbs. The sentences used here are shown in appendix 3b(i) and (ii).

The picture of accentuation in the first object of valence-increased verbs is not very clear at all. It seems that if there is an F0 peak present, its location is syntactically determined. However, sometimes there is no accent at all. Moreover, whether there is an accent present or not can vary even from one repetition to another of the same sentence. The first object phrase from two tokens of the same sentence are shown in figure 18. In one token, there is an F0 peak on the final syllable of the phrase and in the other, there is no peak.

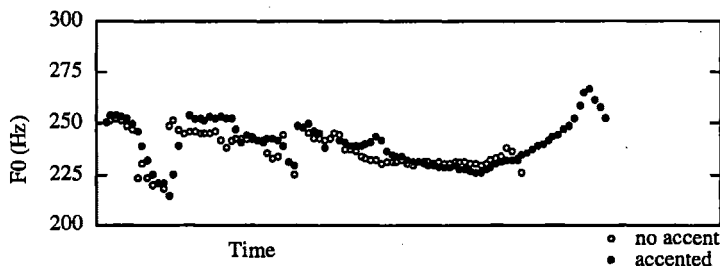


Figure 18. Two tokens of the same utterance, one with and one without accent. (Only the first object itself is shown here.) [tiyaŋ miliaŋ adın tiyaŋ sipatu puth mitali barah] "I bought new white shoes laced with red for my brother."

If there is an accent present in the first object of a double-object construction, it follows the same principles of accentuation described above, that is, it falls on the last syllable of the first object NP. The points in figure 19 average over 11 tokens, 6 with 3-syllable simple nouns as object 1 ([pana?ne] "his/her children" or [bayine] "his/her baby") and 5 with more complex NPs. Two of the more complex NP tokens were [adın tiyaŋ] "my brother," two were [buku barune] "the red book," and one was [pana?ne muani abisiŋ] "his/her only son." An unpaired t-test shows that pre-final syllables are different from final syllables at the .05 level. The fact that all of the pre-final syllables of the object have a lower F0 and that there is only ever one peak, even in more complex NPs, may indicate that this object phrase is being phrased together with the verb, and that the verb is the head of the phrase.

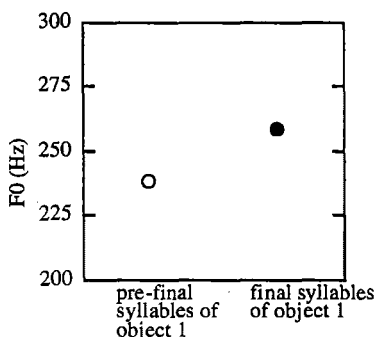


Figure 19. Accented first object in double-object constructions. The sentences used here are shown in appendix 3b(ii).

An explanation for the lack of accent in the cases in which there is no accent in the first object may be a type of "de-phrasing," where a potential accent is not realized. This view is supported by data from spontaneous narratives, where there often is not an F0 peak where an accent might be expected from the principles described above. Thus, it seems that the principles discussed above describe where an accent can be placed if one is indeed to be placed in the sentence, but they by no means mandate that there must be an accent present in that location. Further investigation may bring out factors which determine the amount of "de-phrasing" vs. accent realization. Such factors might be expected to include speech rate or speech style.

In the second object of double object constructions, the only time an accent was found among these data was in case there was a stative verb/predicative adjective present in the predicate. In Balinese, the predicative adjectives pattern with the stative verbs in some respects. Predicative adjectives can take verbal suffixes such as the valence-increasing suffix [-an] to form a causative with concomitant nasalization of the first consonant (indicating active voice) and they can also be marked for tense or aspect. Thus, Balinese would fall into the "adjectival-verb" class of languages as opposed to the "adjectival-noun" class of languages (in the typology suggested by Schachter (1985)), although the adjectives would form a subset of the verbs since they can also be used attributively or with comparative or superlative marking. In any event, the only cases found in the corpus where there was an F0 peak on the second object of double object constructions was before stative verb/predicative adjectives. For example, in noun phrases such as the following there could be an F0 peak on the last syllable of the attributive adjective "big," before the stative verbs/predicative adjectives indicating "3-storied" and "metal-fenced."

umah	gide	mitingkat	tilu	mipagihan	bisi
<i>house</i>	<i>big</i>	<i>storied</i>	<i>three</i>	<i>fenced</i>	<i>metal</i>
a big 3-storied metal-fenced house					

Figure 20. Double-object construction which could have an accent on the second object.

There could be an F0 peak on the last syllable of "big" whether it was followed by either one of the two predicative adjectives listed above or by both. In these cases, it may be that the stative verb/predicative adjectives are being set off in their own phrases. Again, there

are cases where two tokens of the same utterance show different accentuation, as in figure 21. One token shows an F0 peak on the last syllable of the adjective "big," while the other token of the same phrase shows no F0 peaks at all within the second object phrase.

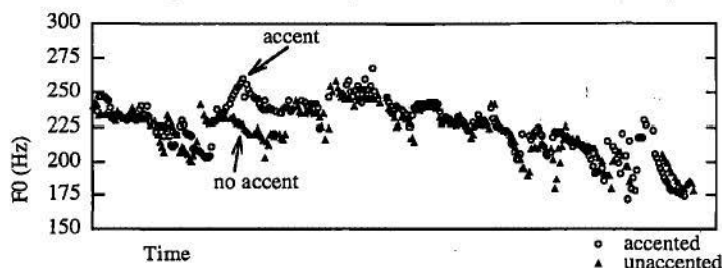


Figure 21. F0 traces of two tokens of the same second object in double-object constructions. One of these repetitions has an accent on the final syllable of the word [gide] "big" and the other does not have an accent in that location, or anywhere. The sentence shown here is [iyi naenan pana?ne umah gide mitinkat tilu mipaqihan bisi] "he builds his child a big three-storied, metal-fenced house" although only the underlined part (the second object itself) is shown here.

Thus, these cases seem to be showing yet again the interaction between having an F0 peak on the final syllables of heads of phrases and the last syllables of phrases and reducing the F0 range sentence-finally. Again, the principles for accent-placement seem to legislate where an accent can go should an accent be placed, but they do not mandate that an accent must be present, and there seems to be some freedom involved as to whether an accent should be placed or not. Further research would be needed to determine whether accent-placement vs. no accent in such cases has more subtle pragmatic meanings that could possibly be teased out of the sentence.

### PHRASAL "CONTRASTS"

It is possible to disambiguate two potentially ambiguous sentences using the principles of accentuation described above. For example, the sentence [sibun kidise gide] "nest-of bird-the big" can have two interpretations. One interpretation is "the nest of the bird is big" if "big" is understood to modify "the nest of the bird" (since there can be adjective constructions in Balinese without a copula). This interpretation can be facilitated by a peak on "bird-the," which phrases "nest-of" and "bird-the" together and leaves "big" modifying the whole preceding phrase. Another interpretation is "the nest of the big bird" if "big" is understood to modify "bird." This interpretation is facilitated by a peak on "nest-of," setting it in its own phrase apart from "bird-the" and "big" which are then phrased together. These two phrasings are shown in figure 22. Thus, although lexical contrasts through accentuation are not possible in Balinese because lexical accentuation is not distinctive, phrasal contrasts through accentuation are possible because the accentuation occurs at the phrasal level, and so can serve to distinguish different phrasings.



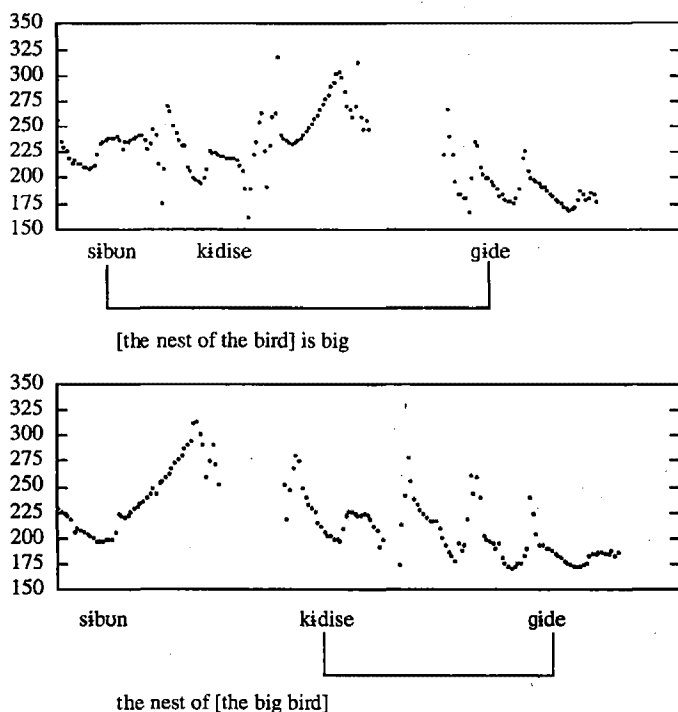


Figure 22. F0 traces showing examples of disambiguating via phrasing. The two sentences shown here are lexically identical, but prosodically differentiated. Thus, the adjective [gide] "big" is modifying either the noun [sibun] "the nest of" or the noun [kidise] "the bird."

## PRINCIPLES OF ACCENTUATION IN CLAUSES

Relative clauses in Balinese are formed with the relativizer [ane] and the relative clause embedded after the subject NP. In such constructions, there is the usual accentuation in the subject phrase with a rise on the final syllable of the head and another rise on the final syllable of the phrase, just before the relativizer. The points in figure 23 average over four tokens with relative clauses. The large error in the final syllables comes from averaging over only 4 F0 values, while the pre-final syllable values come from an average over many more syllables.

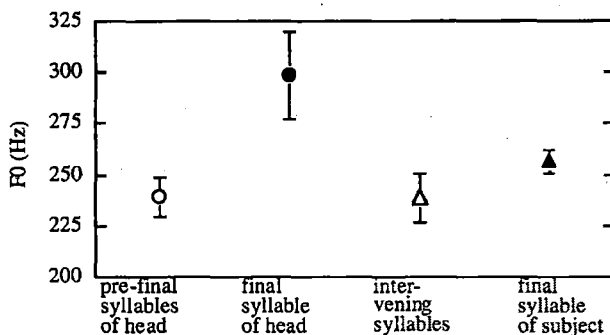


Figure 23. F0 values in complex NPs modified by relative clauses. These values are from the subject itself. The sentences used here are shown in Appendix 4a.

Within the relative clause itself, there is also an F0 rise on the final syllable, with all of the pre-final syllables showing a consistently low F0 value. Unpaired t-tests show that the pre-final syllables are statistically different from the final syllables at the .05 level. So again, the accentuation is serving a delimitative purpose here, by setting off the relative clause from the rest of the sentence.

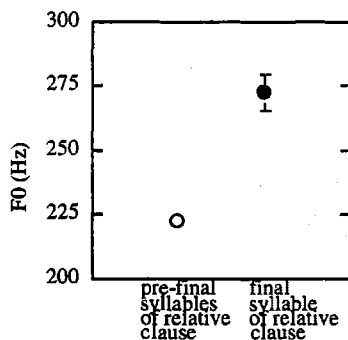


Figure 24. Pre-final syllables within the relative clause vs. the final syllable of the relative clause. The sentences used here are shown in appendix 4a.

In conditionals, the "if" clause has an F0 peak on the last syllable of the word "if" and on the last syllable of the clause before the "consequence" clause, which in the tokens shown here is an imperative. The "if" clauses used here varied in terms of syntactic structure. The points in figure 23 average over 6 examples. Since there is no peak on the NP within the clause, this seems to indicate that the word "if" is itself the head of the clause.

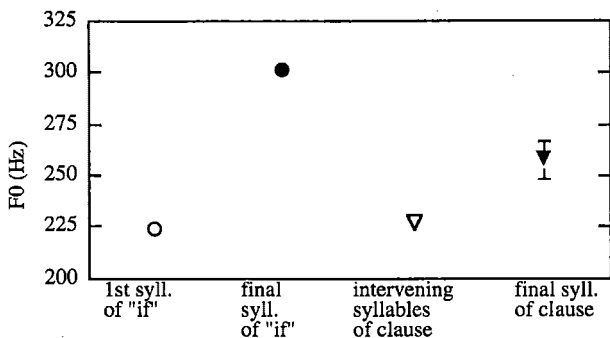


Figure 25. F0 values of conditionals. The sentences used are shown in Appendix 4.

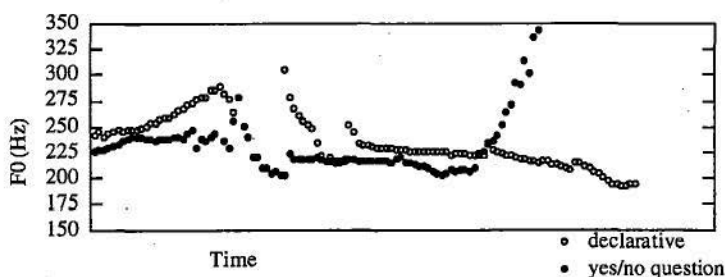
Thus, accentuation works the same way in relative clauses and in conditionals as it does in the phrases described above. There is an F0 peak on the final syllable of the head and another F0 peak on the final syllable of the clause itself.

#### SENTENCE-LEVEL INTONATION

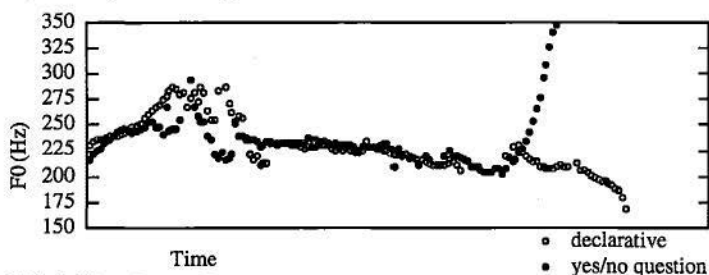
Accentuation in Balinese, as shown above, is syntactically governed. However, F0 may also be used to indicate the pragmatic function of a sentence. In Balinese it is possible to form pragmatically different utterances using identical lexical items, via intonation. For example, yes/no interrogatives may have the same string of words as indicative sentences, but may be differentiated by F0 contour. The yes/no questions in Balinese differ from declaratives in two ways. First, there is a sharp rise on the final syllable of the yes/no question. It does not matter how long the utterance is, this rise will coincide with the last syllable of the utterance only. Second, the F0 peak usually present on the last syllable of the subject in 1-word nominal subjects is missing in yes/no questions. Both of these phenomena are shown in the figure 26, in which two examples are given of lexically identical sentences differentiated by intonation.

This type of yes/no question formation, in which the interrogative status of the sentence is conveyed not by lexical differences but by the F0 pattern, is seen in other languages as well. For example, Bolinger (1978) surveys languages which have rising terminals in yes/no questions and cites many examples.

Thus, F0 may also serve pragmatic functions in Balinese and not just delimitative functions. In fact, the pragmatic functions seem to override the syntactically governed accentuation, as suggested by the lack of accent on the subjects in yes/no questions.



a) [iyi sidih nulis]  
he is writing/ is he writing?

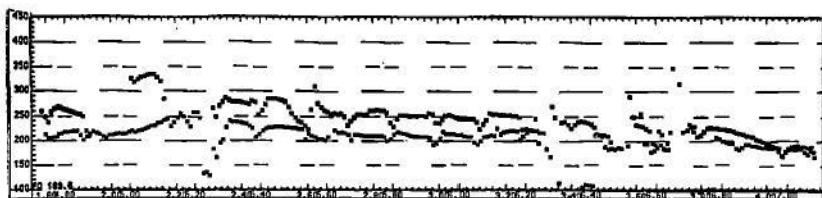


b) [iyi sidih nulis surat]  
he is writing a letter/ is he writing a letter?

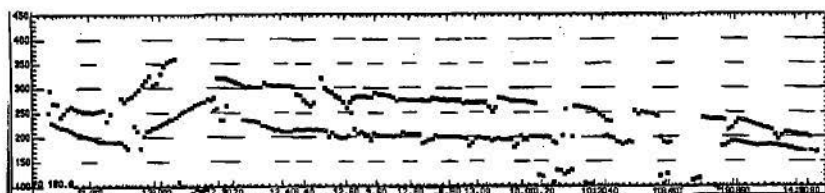
Figure 26. F0 traces of declarative sentences overlaid on F0 traces of yes/no interrogatives.

In Balinese, it is also possible to form "wh-questions" that are very similar to declaratives, with a "wh-word" substituted for a noun. In these cases, the "wh-question" has a higher F0 range than the declarative and the "wh-word" itself seems to have a steeper F0 rise than the noun it replaces, as seen in figure 27.

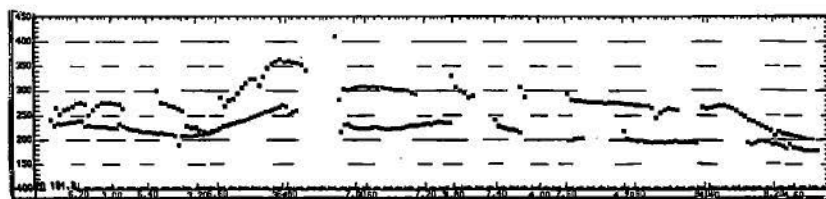
The F0 patterns seen in "wh-questions" in Balinese resemble those seen in Tokyo Japanese (Maekawa, 1991) and in Korean (Jun and Oh, 1994). In Tokyo Japanese, it is possible to form two lexically similar sentences where one is a "wh-question" and one is an indefinite. The "wh-questions" are prosodically different from the indefinites in two ways—the F0 peak on the "wh-word" is more salient and the "wh-sentence" consists of one intermediate phrase while the indefinite contains a prosodic boundary and hence has two intermediate phrases. In Korean, there is also a prosodic difference between "wh-words" as used in "wh-questions," in incredulity readings, and as indefinite pronouns in yes/no questions. The three question types are distinguished by boundary tones and phrasing, with the "wh-questions" and incredulity questions in one accentual phrase and the pitch being higher in incredulity questions than in yes/no questions and higher in yes/no questions than in "wh-questions." So the patterns of F0 expansion throughout the sentence in Balinese and particularly on the "wh-word" itself are reminiscent of the patterns seen in other languages.



- a) [buŋi ane diŋinini aɕa? iyi] It is a flower that is liked by him.  
 [napi ane diŋinini aɕa? iyi] What is it that is liked by him?



- b) [sari ane diŋinini aɕa? iyi] It is Sari that is liked by him.  
 [siri ane diŋinini aɕa? iyi] Who is it that is liked by him?



- c) [bin mani iyi ki sikolahan] Tomorrow he will go to school.  
 [bin pidan iyi ki sikolahan] When will he go to school?

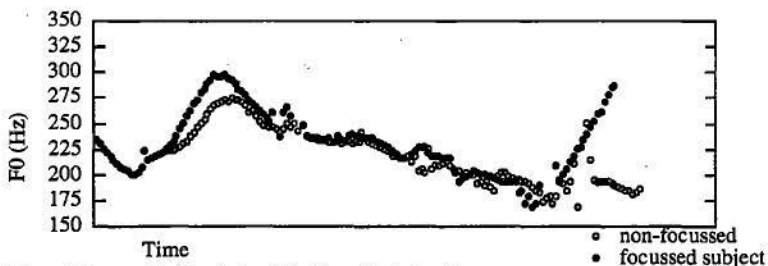
Figure 27. F0 traces of declarative sentences overlaid on F0 traces of wh-questions.

Another pragmatic use of F0 in Balinese is to focus a particular element in the sentence. This type of situation can be elicited through a set of questions which all prompt the "same" answer (lexically speaking) but which require the speaker to contradict a different element of the question in each answer. (Two sets of similar examples are listed in Appendix 5.) For example, one answer might be:

[tiyaŋ lakuŋ nambah baɖu] "I will wash clothes."

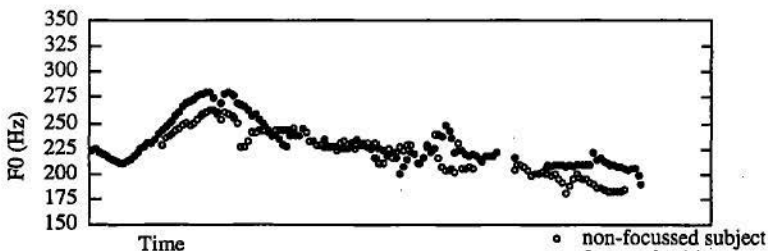
Various questions can be asked which prompt the "same" sentence as a response. For example:

- [lakuŋ nuɖaŋ ?] "What will you do?" should elicit a non-focussed reply.
- [iyi lakuŋ nambah baɖu ?] "Will she wash clothes?" should elicit a reply with narrow focus on the subject.
- [lakuŋ niŋi ?] "Will you iron?" should elicit a reply with narrow focus on the verb.
- [lakuŋ nambah siprai] "Will you wash the spread?" should elicit a reply with narrow focus on the object.
- [səmpuŋ nambah baɖu ?] "Did you already wash the clothes?" should elicit a reply with narrow focus on the tense marking.



[tiyaŋ lakuŋ nambah baɖu] "I will wash clothes" as answers to:

- [lakuŋ nuɖaŋ?] "What will you do?"
- [iyi lakuŋ nambah baɖu?] "Will s/he wash the clothes?"



[iyi lakuŋ niŋet umah]

"She will paint the house" as answers to:

- [iyi lakuŋ nuɖaŋ ?] "What will she do?"
- [raŋane lakuŋ niŋet umah ?] "Will you paint the house?"

Figure 28. F0 traces of sentences with focussed subjects overlaid on F0 traces of non-focussed sentences.

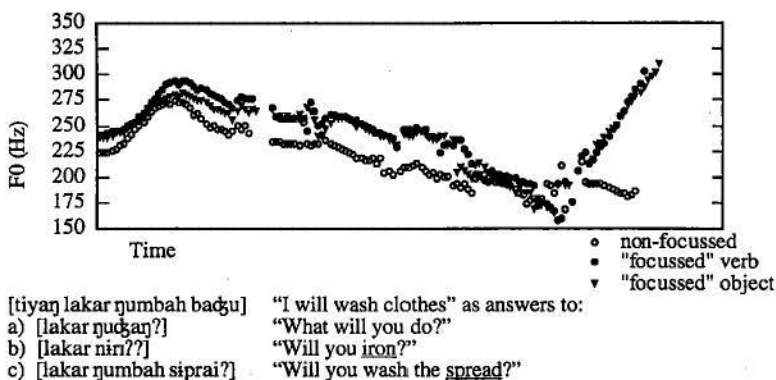


Figure 29. F0 traces of sentences with "focussed" verb or object overlaid on an F0 trace of a non-focussed sentence.

The question is whether the speaker can prosodically focus certain elements of the sentence by putting the F0 accent in a higher pitch range than normal. At first glance, some elements of the sentence did appear to have a higher F0 when that element was in narrow focus. In order to test the salience of the alleged prosodic focus in various locations in the sentence, a listening experiment was performed several weeks after the recording. The answer-sentences which had been elicited earlier were played back to the speaker in random order and she was asked what would be an appropriate question that would elicit each sentence as an answer. She correctly proposed a general question for non-focussed sentences, a question about the subject for sentences with the subject under focus, and a question about the tense marking for the sentences with the tense marking under focus, but the sentences with the allegedly focussed object and the sentences with the allegedly focussed verb sounded the same to her (and so she did not consistently propose the correct question). It seems like elements in the sentence which are accentable anyhow according to the principles described earlier can be prosodically focussed. That is, in the sentence above, the subject and the tense marking can be prosodically focussed but not the verb or the object, which are in the sentence-final phrase and hence usually do not have an accent at all. The examples in figure 28 and 29 compare a general, non-focussed sentence with a sentence with narrow focus on the subject, on the verb, and on the object. (The sentence-final syllable may show a continuation rise, which may not be relevant to the focus issue at all.) The sentences with narrow focus on the subject (the two displays in figure 28) do show a higher peak on the final syllable of the subject than the declarative sentences have, but the sentences with the narrow focus on the verb and on the object (the display in figure 29) are quite similar to the non-focussed sentence.

Interestingly, the un-focus-able elements, such as the object, can be syntactically focussed by being topicalized and appearing at the beginning of the sentence, as in [tin, urutan ane lakar gaeni] "no, it is sausage that will be made" or [tin, umahne ane lakar [feti] "no, it is the house that will be painted." So a tentative conclusion on prosodic focus in Balinese is that focus can enhance an F0 peak that would be expected to be present in any case, but it cannot place an F0 peak in an "unaccentable" location in the sentence. Some such "unaccentable" locations, though, can be syntactically topicalized, thus allowing them to be focussed by position rather than by prosody (although it might be argued that the motivation for the focus-by-position option is in fact the prosodic restrictions on "accentable" vs. "unaccentable" positions).

## CONCLUSION

In conclusion, in Balinese there is no lexical level accentuation. At the phrasal level, there is an accent on the last syllable of the head of the phrase and on the last syllable of the phrase, although this effect is confounded in predicates by a sentence-final F0 compression. The accentuation is cross-categorical, occurring on any phrasal head and on any final syllable, regardless of their syntactic categories. There is also pragmatic use of F0 made in Balinese, including yes-no question formation, wh-question formation, and focus. Thus, Balinese shows no word-level accentuation but completely regular phrasal use of accentuation, as indicated by the consistency of alignment between F0 peaks and particular syntactic positions.

## APPENDIX 1: sentences with single-word subjects

### a) 1-word nominal subjects:

yehe sampun miluwab  
water-the already boils  
the water's already boiling

iyi nyait bantin aḋa? ṅae ḋaḋi  
she makes crafts and makes cookies  
she makes crafts for offerings and makes cookies

tiyan mambuh tuni simiṅan kirani bo? tiyaṅ  
I wash earlier because hair mine  
sampun daki  
already dirty  
I washed my hair earlier this morning because my hair was already dirty.

tiyan ṅidupar lampu apar galar umahe  
I turn on lamp for lighting house-the  
I turn on the lamp for lighting the house.

limane ḋipis ḋilanan  
hand-his caught door  
his hand is caught in the door

sudiri miḋḋuḋu? di pisareane  
sudiri stands on/at bed-the  
Sudiri stand on the bed

packine binahini aḋa? ibun pisagan tiyaṅ  
umbrella-the was fixed by mother-of neighbor-of mine  
the umbrella was fixed by my neighbor's mother

kurinane duruṅ lulus di sikolahan  
wife-his not yet graduated from school  
his wife has not yet graduated from school

gigelane miḋḋuḋu? di kursine  
boyfriend-her stands on chair-the  
her boyfriend stands on the chair.

sipedane pisilihaṅ aḋa? gigelane  
bicycle-the was lent by boyfriend-her  
the bicycle was lent by her boyfriend

kiponaane sampun gide gide  
niece-her already grown-up  
her niece is already grown up



pirabotane      luwunluwun      gati  
*furniture-his*      *good*      *very*  
 his furniture is very good

matematikane      mankin      nantjan      sukih  
*math*      *now*      *become/more*      *difficult*  
 math now becomes difficult

#### b) conjoined nominal subjects:

bapane      aca?      ibune      ninjin iyi      di      rumah sakit  
*father-his*      *and*      *mother-his*      *visit him*      *at*      *house sick*  
 his father and his mother visit him at the hospital

bapane      nabi      biline      ane      lakar      nathun      iyi      ki      dokter  
*father-his*      *or*      *brother-his*      *that*      *will*      *drop off*      *him*      *at*      *doctor*  
 it is his father or his brother who will drop him off to the doctor

iyi      aca?      timpalne      ki pikin      barin barin  
*he*      *and*      *friend-his*      *to market*      *together*  
 he and his friend went to market together

### APPENDIX 2: sentences with more complex subjects

#### a) genitive constructions:

ibun      tiyane      milandjaran      ki      umah timpalne  
*mother-of*      *mine*      *travels to*      *house*      *friend-hers*  
 my mother travels to her friend's house

adin      tiyane      miumah umahan      di      biten      mechine  
*brother-of*      *mine*      *plays house*      *on/at*      *bottom*      *table-the*  
 my brother plays house under the table

adin      tiyane      miumah umahan      di      duwur punyan  
*brother-of*      *mine*      *plays house*      *at*      *top*      *tree*  
*kayune*      *tigh*  
*wood-the*      *tall*  
 my brother plays house at the top of the tall tree

adin      tiyane      sampun      suwod      masu?      di      bandun  
*brother-of*      *mine*      *already*      *finished*      *studying*      *at*      *bandung*  
 my brother already finished studying at bandung

miyon      tiyane      aca?      ififin      timpal tiyane      mikirah      dogen      gaeni  
*cat*      *mine*      *and*      *dog*      *friend mine*      *fight*      *always*      *make*  
 my cat and my friend's dog always fight

duwan      tiyane      bisi      mine?      punyan      nyuh  
*aunt-of*      *mine*      *can*      *climb*      *tree*      *coconut*  
 my aunt can climb a coconut tree

umah      tiyane      aca?      kantor      pose      mipai?an  
*house*      *mine*      *and*      *office*      *post*      *close*  
 my house and the post office are close

misanan      tiyane      tin      dimin      nango      ro?      kirani      iyi  
*cousin*      *mine*      *not*      *like*      *wear*      *skirt*      *because*      *she*  
*masi*      *kewih*      *gati*      *lamin*      *iyi*      *nango*      *ro?*  
*feels*      *awkward*      *very*      *if*      *she*      *wears*      *skirt*  
 my cousin doesn't like to wear skirts because she feels awkward when she does

pisagan      tiyane      niga? di      kursine  
neighbor      mine      sits      at/on      chair-the  
my neighbor sits on the chair

kiponaan      tiyane      sampun      bisi      mičalan  
niece-of      mine      already      can      walk  
my niece already can walk

warnan      pačin      iyine      bara? ača?      putih  
color-of      umbrella-of      his-the      red      and      white  
the color of his umbrella is red with white

bapan      timpal      tiyane      nyumunin      rae      bale      bin      tilon  
father-of      friend      mine      begins      make      gaz.      fut.      three  
my friend's father begins to make a traditional gazebo in three days

ibu      timpal      tiyane      bisi      rae      baču  
mother      friend      mine      can      make      clothes  
my friend's mother can make clothes

ibun      pisagan      tiyane      misilihari      misanan  
mother-of      neighbor-of      mine      lent      cousin-of...  
my neighbor's mother lent my friend's father's cousin...

#### b) adjectives:

bačune      (((tipis))      bara?)      lambih)      pantiŋi      ača?      i meme  
skirt-the      long      red      thin      was washed      by      mother  
the (((long) red) thin) skirt was washed by mother

titiŋi      (((gide))      badin)      gala?)      mikupin      dawi)      nyigut      ana?e  
dog-the      big      black      mean      eared-      long      bit      person-  
the  
tuwi      nidihihi  
old      beggar  
the (((big) black) mean) long-eared) dog bit the old beggar-person

#### c) pre-posed stative verbs:

mitakon      iyi      ača?      gurune  
asks      he      with      teacher-the  
he's asking the teacher

miblandi      ibu      sibilan      simiran      ki      pikin      ane  
shops      mother      every      morning      at      market      that  
pai? ača? umahe  
close      with      home-the  
mother shops every morning at the market that's close to the house

mičalan      iyi      di      sisin      pasihe  
walks      he      at      edge      ocean-the  
he's walking at the beach

mikau?an      iyi      kiras kiras  
shouts      he      loudly  
he shouts loudly

migu?an      batune      mari      inč?i?      tiyan  
rolls      stone-the      just/as      stepped      I  
the stone rolled when I stepped on it

### APPENDIX 3: Accent in Predicates

#### a) passive verbs:

lulune      intunani      ača? uwan      tiyane ki      ʔilabahe  
*garbage-the was thrown away by aunt-of mine to river-the*  
 the garbage was thrown away by my aunt to the river

umahne      kidasini      ača? pimbantune      sibilan wayi  
*house-the was cleaned by maid-the every day*  
 the house was cleaned by the maid every day

lulune      intunani      ki      ʔilabahe      ača? uwan      tiyane  
*garbage-the was thrown away to river-the by aunt-of mine*  
 the garbage was thrown away to the river by my aunt

umahne      kidasini      sibilan wayi      ača? pimbantune  
*house-the was cleaned every day by maid-the*  
 the house was cleaned every day by the maid

pana?ne      pilayibani      ki      bulelen      ača? bapane  
*child-the was whisked away to Buleleng by father-his*  
 the child was whisked away to Buleleng by his father

sibun      kidise      uwugani      ača? adin      tiyane  
*nest-of bird-the was destroyed by little sibling-of mine*  
 the bird's nest was destroyed by my little sibling

q̄ndeli      kaʔane      bilahani      ača? rarene  
*window glass-the was broken by kids-the*  
 the glass window was broken by the children

pačine      binahini      ača? ibun      pisagan      tiyane  
*umbrella-the was fixed by mother-of neighbor-of mine*  
 the umbrella was fixed by the mother of my neighbor

ro?ne      binahini      ača? ibun      tiyane  
*skirt-the was fixed by mother-of mine*  
 the skirt was fixed by my mother

kipas      anine      pisilihani      ača? ibun      pisagan      tiyane  
*fan wind-the was lent by mother-of neighbor-of mine*  
 the electric fan was lent by the mother of my neighbor

ki      ʔilabahe      lulune      intunani      ača? uwan      tiyane  
*to river-the garbage-the was thrown away by aunt-of mine*  
 the garbage was thrown away to the river by my aunt

#### b) double object constructions:

##### i) simple verbs:

(2 tokens each:)

tiyan maʔi      mačalah  
*I read magazine*  
 I'm reading a magazine.

(1 token each:)

iyi mati  
*he died*  
 he died

iyi nonos di      umah      tiyane  
*he stays at house mine*  
 He stays at my house.

iyi nae      umah  
*he builds house*  
 He builds a house.

tiyan mili      sipatu baru  
*I bought shoes new*  
 I bought new shoes

bayine      sirip di      siripane  
*baby-the sleeps in bed-poss.*  
 the baby sleeps in its bed

ii) valence-increasing verbs:

tiyaŋ naɖipaŋ iɣi buku  
I sell-for him book  
I'm selling a book for him

(2 tokens)

tiyaŋ milian adin tiyaŋe sipatu baru  
I bought-for brother-of mine shoes new  
I bought new shoes for my brother

(2 tokens)

tiyaŋ milian adin tiyaŋe sipatu putih mitali barah  
I bought-for brother-of mine shoes white laced red  
I bought new white shoes laced with red for my brother.

(2 tokens)

iɣi naenən pana?ne umah  
he builds-for children-poss. house  
he builds a house for his children

(2 tokens)

iɣi naenən pana?ne muani abisi? umah  
he builds-for child-poss. male only house  
he builds a house for his only son.

iɣi naenən pana?ne umah gide mipagihan bisi  
he builds-for child-poss. house big fenced metal  
he builds a big house with a metal fence for his child

iɣi naenən pana?ne umah gide mitiŋkat tilu  
he builds-for child-poss. house big storied 3  
he builds a big 3-storied house for his child

iɣi naenən pana?ne umah gide  
he builds-for child-poss. house big  
he build for his child a big house

(2 tokens)

iɣi naenən pana?ne muani abisi? umah gide mitiŋkat  
he builds-for child-poss. male only house big storied  
tilu mipagihan bisi  
3 fenced metal  
he builds for his only son a big 3-storied house with a metal fence

iɣi naenən pana?ne umah gide mitiŋkat tilu  
he builds-for child-poss. house big storied 3  
mipagihan bisi  
fenced metal  
he builds for his child a big 3-storied house with a metal fence

(2 tokens)

tiyaŋ nedənən buku barune aɖa? iɣi  
I show-to book new-the to him  
I show the new book to him.

(2 tokens)

tiyaŋ nedənən bukune tibil mikulit bara? aɖa? iɣi  
I show-to book-the thick covered red to him  
I show the thick book covered in red to him.

(2 tokens)

tiyaŋ	<u>nedenan</u>	bukune	barune	aɕa?	iyi	mikiɕaŋ
I	show-to	book-the	new	to	them	

I show the new book to them

(2 tokens)

tiyaŋ	<u>nedenan</u>	bukune	tibil	mikulit	bara?	aɕa?
I	show-to	book-the	thick	covered	red	to
iyi	mikiɕaŋ					
them						

I show the thick book covered in red to them.

iyi	<u>nyiripan</u>	bayine	di	siripane
she	sleep-causative	baby-her	in	bed-the

She puts her baby to sleep in the bed.

iyi	<u>nonosan</u>	pana?ne	di	umah	tiyaŋe
he	house-causative	children-poss.	at	house	mine

He houses his children at my house.

iyi	<u>nonosan</u>	pana?ne	luh	ɕigeg	mikulit	kidas
he	house-causative	child-poss.	female	beautiful	skinned	clean
di	umah	tiyaŋe				
at	house	mine				

He houses his beautiful daughter with clean skin at my house.

iyi	<u>nonosan</u>	pana?ne	di	umah	gide
he	house-causative	children-poss.	at	house	big
gilah	pamane				
owned-by	uncle-his				

He houses his children at the big house owned by his uncle.

#### APPENDIX 4: Clauses

##### a) relative clauses:

ana?	luh	tuwi	<u>ane</u>	<u>tipun</u>	<u>tiyaŋ</u>	ɕalan	ɕalan	aɕa?	ʔiʔiŋne
person	female	old	that	saw	I	walk		with	dog-her

The old woman that I saw took a walk with her dog.

bayine	<u>ane</u>	<u>mari</u>	<u>bisi</u>	<u>miɕalan</u>	<u>into</u>
baby-the	that	just	can	walk	this
ŋiliŋ	dogen	kirani	iyi	nyakitan	basan
cries	always	because	s/he	sickened	stomach

The baby that can just walk always cries because he has a stomach pain.

murd	<u>ane</u>	<u>bilog</u>	<u>into</u>	tin	mine?	kilas
student	that	stupid	this	not	pass	class

this student that's stupid didn't pass the class

pisagan	tiyaŋe	<u>ane</u>	<u>noyon</u>	<u>pididini</u>	ʔari	ana?	buduh
neighbor-of	mine	that	lives	alone	looks	person	crazy

My neighbor that lives alone looks like a crazy person.

##### b) conditionals:

<u>lamin</u>	<u>baɕune</u>	<u>sampun</u>	<u>kilit</u>	baan	adine	dogen
if	clothes-the	already	tight	give	brother-the	(just)

if the clothes are already tight, just give them to the brother

<u>lamin</u>	<u>subi</u>	<u>sandɕi</u>	mulih	nyin
if	already	evening	come home	please

If it's already evening, come home.

<u>lamin</u>	<u>umbah</u>	<u>tiyan,</u>	<u>baɖune</u>	<u>niki</u>	<u>bisi</u>	<u>dadi</u>	<u>kidas</u>
<i>if</i>	<i>wash</i>	<i>I,</i>	<i>clothes-the</i>	<i>here</i>	<i>can</i>	<i>become</i>	<i>clean</i>

if I wash, these clothes can be clean

<u>lamin</u>	<u>sampon</u>	<u>tikid</u>	<u>ditu,</u>	<u>kinmun</u>	<u>nyin</u>	<u>tiyaŋ</u>	<u>surat</u>
<i>if</i>	<i>already</i>	<i>arrive</i>	<i>there,</i>	<i>send</i>	<i>please</i>	<i>me</i>	<i>letter</i>

if you already arrive there, send me a letter

<u>lamin</u>	<u>yehe</u>	<u>di</u>	<u>panʈine</u>	<u>sampon</u>	<u>miluwab,</u>
<i>if</i>	<i>water-the</i>	<i>in</i>	<i>pan-the</i>	<i>already</i>	<i>boiling,</i>

pulaŋ nyin ɕukute  
*put in please vegetables-the*  
 if the water in the pan is already boiling, put in the vegetables

## APPENDIX 5: Focus

### example 1:

possible answer:

iyi	sidiŋ	ŋae	urutan
<i>s/he</i>	<i>progressive</i>	<i>make</i>	<i>sausage</i>

S/he is making sausage

questions:

- iyi sidiŋ ŋuɕaŋ?  
*s/he progressive do*  
 What's s/he doing? should elicit a non-focussed reply.
- iyi sidiŋ ŋae ɕaɕi?  
*s/he progressive make cookies*  
 Is s/he making cookies? should elicit a reply with narrow focus on the object.
- iyi sidiŋ ŋaɕiŋ urutan?  
*s/he progressive eat sausage*  
 Is s/he eating sausage? should elicit a reply with narrow focus on the verb.

### example 2:

possible answer:

iyi	lakar	ŋiɕet	umah
<i>s/he</i>	<i>future</i>	<i>paint</i>	<i>house</i>

S/he will paint the house.

questions:

- iyi sidiŋ ŋuɕaŋ?  
*s/he progressive do*  
 What's s/he doing? should elicit a non-focussed reply.
- ragane lakar ŋiɕet umah?  
*you future paint house*  
 Will you paint the house? should elicit a reply with narrow focus on the subject
- iyi lakar minahin umah  
*s/he future fix house*  
 Will s/he fix the house? should elicit a reply with narrow focus on the verb.
- iyi sampon ŋiɕet umah?  
*s/he already paint house*  
 Did s/he already paint the house? should elicit a reply with narrow focus on tense.
- iyi lakar ŋiɕet paŋihan?  
*s/he will paint fence*  
 Will s/he paint the fence? should elicit a reply with narrow focus on the object.

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